

REMARKS

I. Drawings

In the Office Action, the Examiner has objected to the drawings as failing to comply with 37 CFR 1.84(p)(5). The Examiner alleges that certain reference symbols were omitted from the figures. Applicant has amended the drawings as shown in red on the attached sheet of drawings to include the reference symbols 14A and 14B. Thus, Applicant respectfully submits that the Examiner's objection to the drawings has been effectively traversed. Such action is earnestly solicited.

II. 35 U.S.C. § 103(a)

In the Office Action, the Examiner has rejected Claims 1, 3, 8-9, 11, 14, and 24-25 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yamada et al., U.S. Patent 6,177,725. Applicant respectfully disagrees.

Applicant claims a unique semiconductor assembly. The semiconductor assembly has a plurality of channels formed on a top surface of a leadframe. The channels are used for promoting adhesion. When a mold compound is used to encapsulate the semiconductor assembly, the mold compound flows into the channels and bonds with the channels forming a lock between the mold compound and the leadframe to prevent delamination of the semiconductor assembly. The semiconductor assembly further has a plurality of raised areas on the leadframe used for wirebonds. The raised areas allow the mold compound to get underneath the

wirebonds and capture the wirebonds to increase reliability of the wirebonds.

In contrast, Yamada et al. (hereinafter Yamada) neither discloses nor anticipates a plurality of channels formed on a top surface of a leadframe. Yamada does not disclose or anticipate channels on the leadframe for allowing the mold compound to flow into the channels and bond with the channels in order to form a lock between the mold compound and the leadframe to prevent delamination of the semiconductor assembly. Yamada does show grooves but the grooves are formed on the die pad and not on the entire leadframe. Furthermore, the grooves perform a totally different function. The grooves in Yamada do not prevent delamination of the semiconductor assembly (i.e., between the leadframe and the encapsulant). The groove in Yamada are formed in order to avoid forming a chip mounting area (Column 6, lines 11-13). Furthermore, the grooves in Yamada are used in order to relieve stress to prevent cracks from occurring (see Column 5, lines 58-61). Nowhere is it disclosed or anticipated that the grooves in Yamada are used to prevent delamination of the semiconductor assembly.

To further patentably distinguish Applicant's claimed invention from Yamada, Applicant has amended Claim 1 to claim a semiconductor assembly having a plurality of raised areas on the leadframe. The plurality of raised areas on the leadframe are used for wirebonds. The raised areas allow the mold compound to get underneath the wirebonds and capture the wirebonds to increase

reliability of the wirebonds. Yamada fails to disclose or anticipate the plurality of raised areas on the leadframe used for wirebonds.

Applicant respectfully submits that Yamada neither discloses nor anticipates Applicant's invention as now claimed. Yamada neither discloses nor anticipates the use of channels formed on the leadframe for promoting adhesion by allowing the mold compound to flow into the channels and bond with the channels forming a lock between the mold compound and the leadframe to prevent delamination of the semiconductor assembly. Yamada also fails to disclose or anticipate the plurality of raised areas on the leadframe for wirebonds. The raised areas allowing the mold compound to get underneath the wirebonds and capture the wirebonds to increase reliability of the wirebonds. Thus, Applicant respectfully submits that the Examiner's rejection of the Claims under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yamada has been effectively traversed. Such action is earnestly solicited.

In the Office Action, the Examiner has rejected Claims 2, 4-7, 10, 12-13, 15, and 26-28 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yamada et al., U.S. Patent 6,177,725 in view of Nakamichi, U.S. Patent 6,127,206. The Examiner acknowledges that Yamada neither discloses nor anticipates raised areas which allow the mold compound to get underneath the wirebonds and capture the wirebonds to increase reliability of the wirebonds.

However, the Examiner contends that Nakamichi discloses a raised portion for capturing wirebonds. Applicant respectfully disagrees.

The Examiner contends that in Figures 3 and 4 of Nakamichi, a raised area for wirebonds is shown. Applicant has reviewed Figures 3 and 4 and no raised areas for wirebonds are shown. Figure 4 does show a wiring pattern 36 to which a wire is bonded using solder (see Column 6, lines 42-44). However, no raised areas which allow the mold compound to get underneath the wirebonds and capture the wirebonds to increase reliability of the wirebonds is disclosed or anticipated.

The Examiner further indicates that Column 5, lines 12-16 discloses the raised areas. Applicant has read this section of Nakamichi and respectfully disagrees. Nakamichi discloses a single groove in each lead. The groove in the lead is used to enhance the reliability and accuracy of optical detection during wirebonding. The groove does increase wirebonding strength but this is due to extending the bonding area (see column 2, lines 20-27). Nakamichi does not disclose or anticipate raised areas which allow the mold compound to get underneath the wirebonds and capture the wirebonds to increase reliability of the wirebonds is disclosed or anticipated.

Furthermore, the legal standard for obviousness under 35 U.S.C. 103 has been the subject of much analysis. The Federal Circuit has enunciated several guidelines in making a Sec. 103 obviousness determination.

A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.

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In re Bell, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed Cir. 1993) (quoting In re Rinehart, 531 F.2d 1048, 1051 (C.C.P.A. 1976)).

{T}he examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. "{The Examiner} can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." (Emphasis added)

In re Fritch, 972 F.2d 1260, 1265, 23 U.S.P.Q.2d 1780, 1783 (Fed Cir. 1992) (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 U.S.P.Q. 785, 787-88 (Fed. Cir. 1984) and In re Fine, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988) (citing In re Lalu, 747 F.2d 703, 705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1988))).

For the Examiner to establish a prima facie case of obviousness, the Examiner must contend that the teachings from the prior art itself or that knowledge generally available to one of ordinary skill in the art would appear to suggest the claimed subject matter to a person of ordinary skill in the art.

Perhaps the Examiner somehow believes that one of ordinary skill in the art could conceivably combine the cited references to produce Applicants' claimed invention. But the Federal Circuit has held that

obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. (Emphasis added)

In re Bell, 991 F.2d 781, 783, 26 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1993) (citations omitted).

Obviousness is tested by "what the combined teachings of the references would have suggested to those of ordinary skill in the art." (Emphasis added) But it "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." (Emphasis added)

In re Fine, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988) (citing In re Keller, 642 F.2d 413, 425, 208 U.S.P.Q.871, 881 (C.C.P.A. 1981) and ACS Hosp. Sys. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984)).

Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination.

Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 U.S.P.Q.2d 1434, 1438 (Fed. Cir. 1988) (citing Lindemann, Maschinenfabrik GmbH v. American Hoist and Derrick Co., 730 F.2d 1452, 1462, 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984)).

Applicant respectfully yet strenuously contends that the Examiner has shown no teaching nor suggestion in any one or more of the cited references or elsewhere of Applicant's claimed apparatus to support a conclusion of obviousness.

By maintaining the two reference combination obviousness rejection, the Examiner has fallen into the common trap of hindsight reconstruction, which has been frequently denounced by the Federal Circuit as inappropriate to support a finding of obviousness.

The obviousness standard, while easy to expound, is sometimes difficult to apply. It requires the decisionmaker to return to the time the invention was made. "the invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time."

Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1050-51, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988) (quoting Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 U.S.P.Q. 543, 547-548 (Fed. Cir. 1985)).

It is clear from the Examiner's rejection that, absent the "blueprint" of Applicants' disclosure, the prior art has no suggestion or teaching of Applicants' claimed invention. The Federal Circuit has also stated:

It is improper to use the patent as an instruction manual to lead to elements of the prior art.

Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1568 (Fed. Cir. 1987).

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious.

In re Fritch, 972 F.2d 1260, 1266, 23 U.S.P.Q.2d 1780, 1784 (Fed. Cir. 1992) (citing In re Gorman, 933 F.2d 982, 987, 18 U.S.P.Q.2d 1885, 188 (Fed. Cir. 1991)).

It is very clear from the Examiner's language that Applicant's claimed invention is only rendered invalid for obviousness if the Applicant's claimed invention is used as an instruction manual, or template, for modifying the cited prior art. Absent the knowledge gleaned from Applicant's disclosure, there is no suggestion or teaching in the cited prior art or in the general knowledge in the art to support the Examiner's assertion that Applicant's claimed invention would have been obviousness to one of ordinary skill in the art. The Federal Circuit has also stated:

When prior art references require selective combination...to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself.

Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 U.S.P.Q.2d 1434, 1438 (Fed.a Cir. 1988) (citing Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985)).

The Examiner has cited no reason for modifying the cited references to allegedly achieve Applicant's claimed invention other than the knowledge gleaned from Applicant's disclosure. For this reason the Examiner has failed to establish a prima facie case of obviousness based on a combination of these specific references.

Applicant respectfully submit that Applicant's claimed invention is deserving of patent protection because it describes a useful and functioning apparatus and method which is patentably distinguishable over the prior art.

In conclusion, Applicant respectfully submit that this Amendment Letter, including the amendments to the Claims, and in view of the Remarks offered in conjunction therewith, are fully responsive to all aspects of the objections and rejections tendered by the Examiner in the Office Action. Applicant respectfully submits that he has persuasively demonstrated that the above-identified Patent Application, including Claims 1, 3-14, and 24-28 are in condition for allowance. Such action is earnestly solicited.

If the foregoing does not place the case in condition for immediate allowance, the Examiner is respectfully requested to contact the undersigned for purposes of a telephone interview.

If there are any fees incurred by this Amendment Letter,
please deduct them from our Deposit Account NO. 23-0830.

Respectfully submitted,



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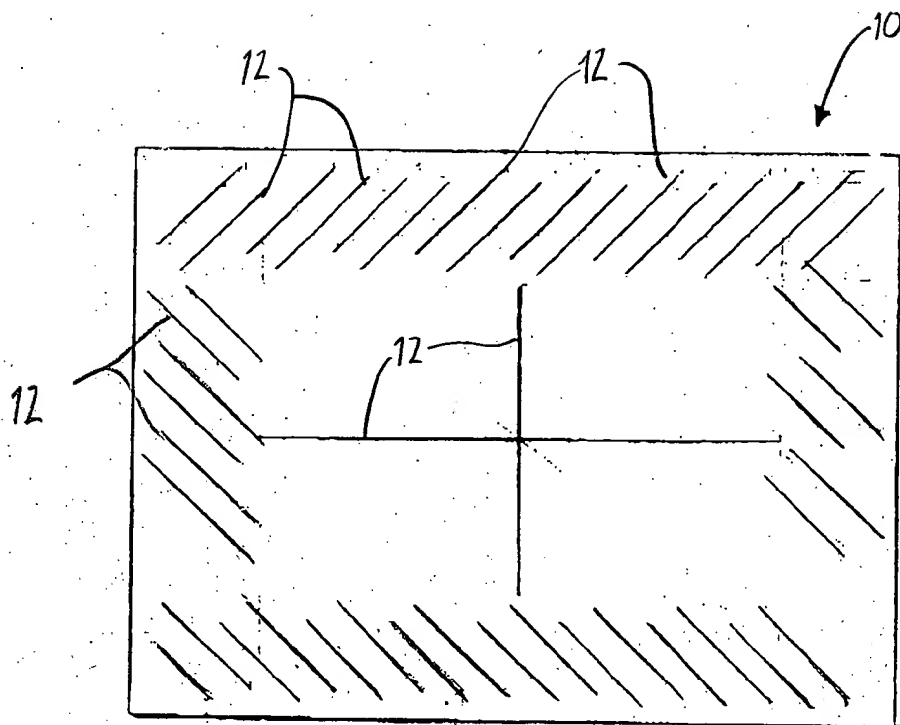


FIG 3

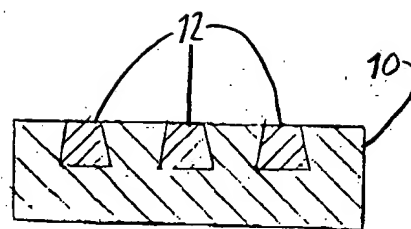


FIG 3A

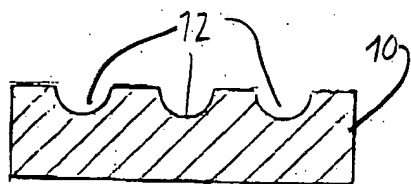


FIG 3B

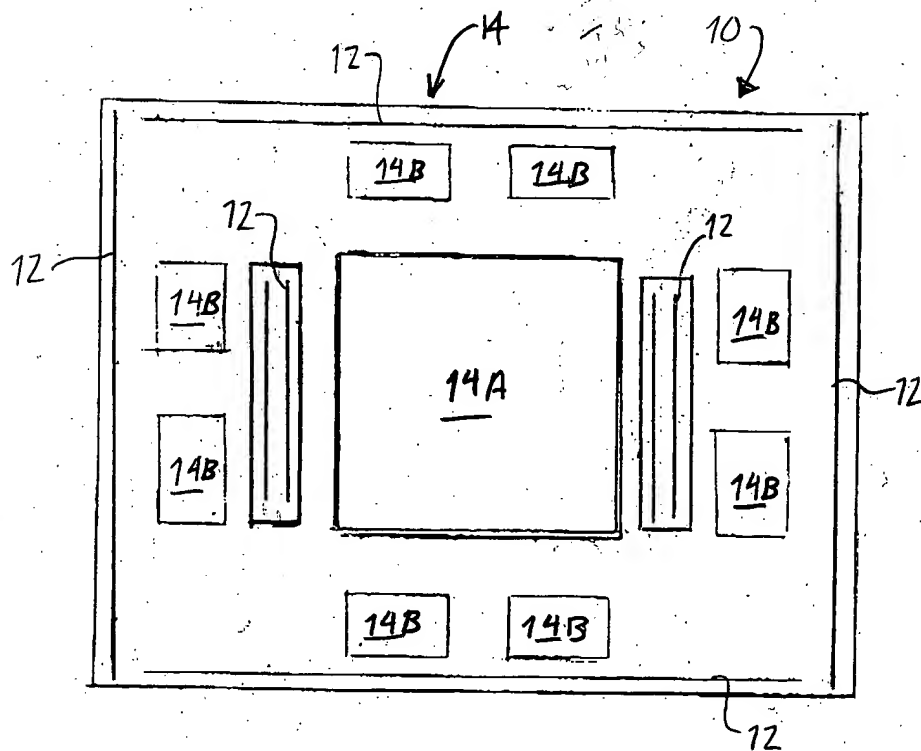


FIG 4

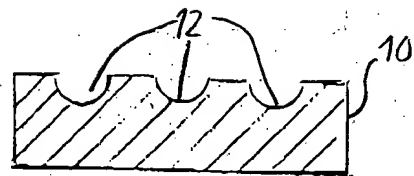


FIG 4A